

The Legendary Properties of Bismuth

Electrostatic Inertia and the Next Technological Revolution

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Mainstream science tells us what happens; tonight we explore why.



1. The Anomaly

Why bismuth grows the way it does (moving beyond simple descriptions).

2. The Cause

Uncovering the hidden fundamental property: Electrostatic Inertia.

3. The Validation

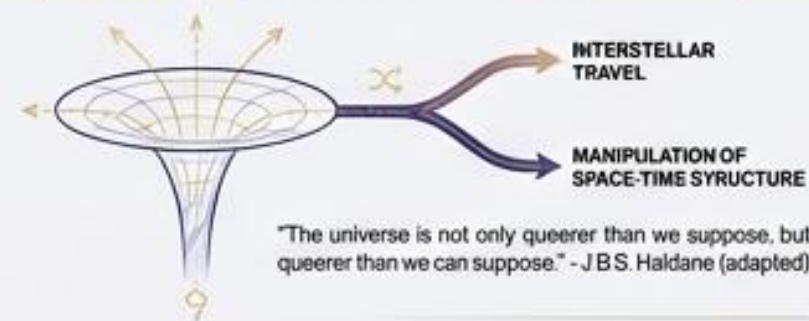
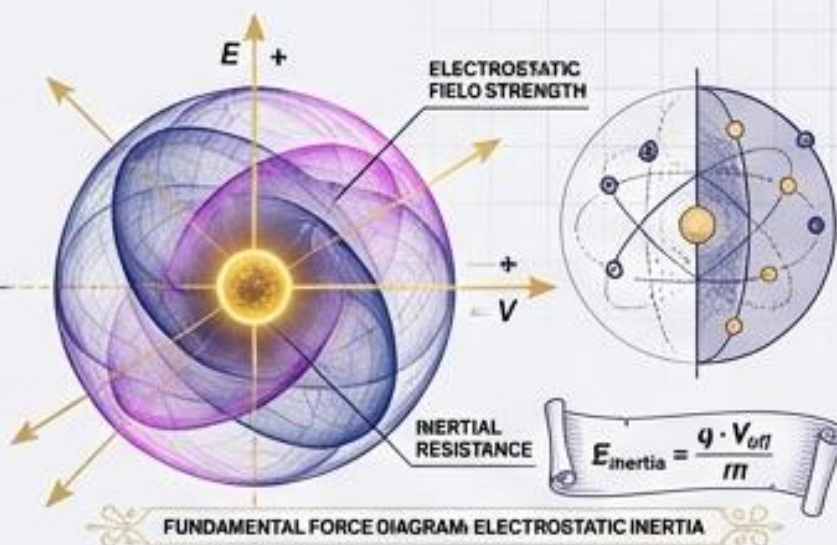
How mainstream science is catching up (2017-2025).

4. The Application

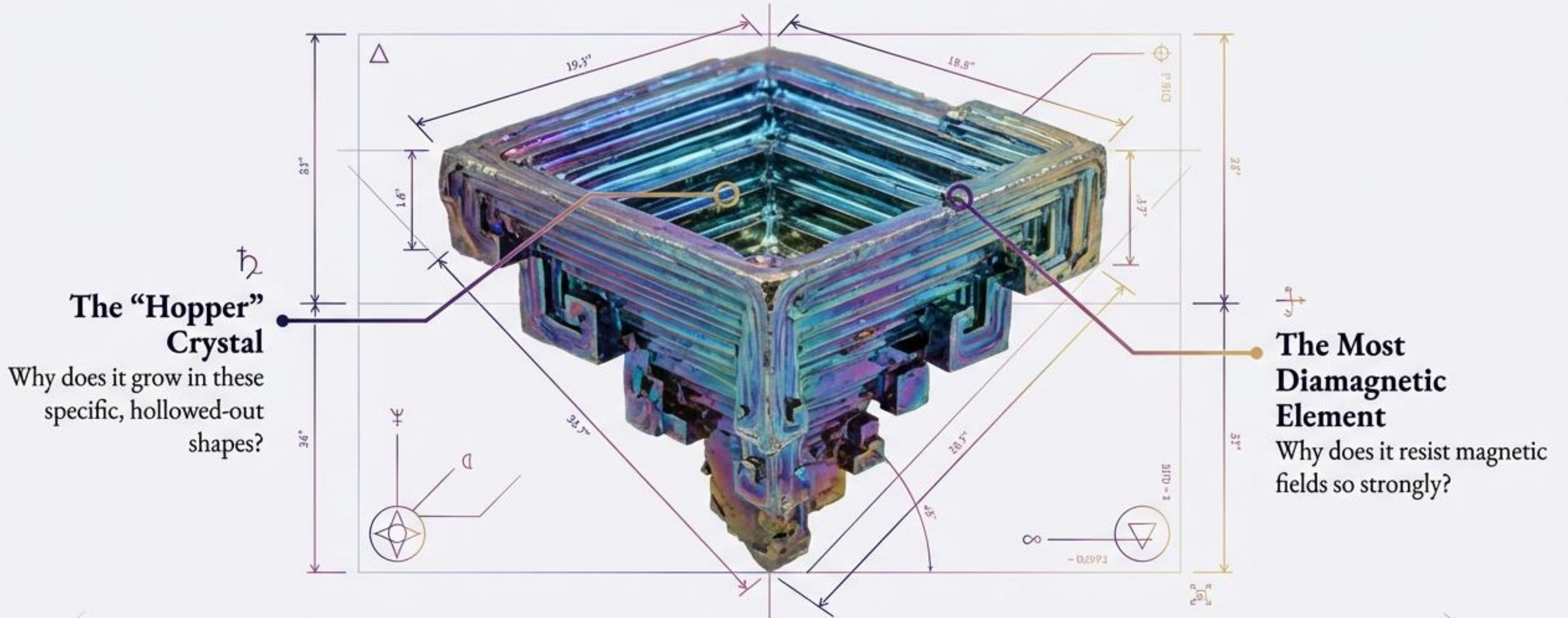
Real-world implications and the next technological revolution.

5. The Frontier

Deep anomalies and speculation on what comes next.



A beautiful anomaly hides in plain sight.



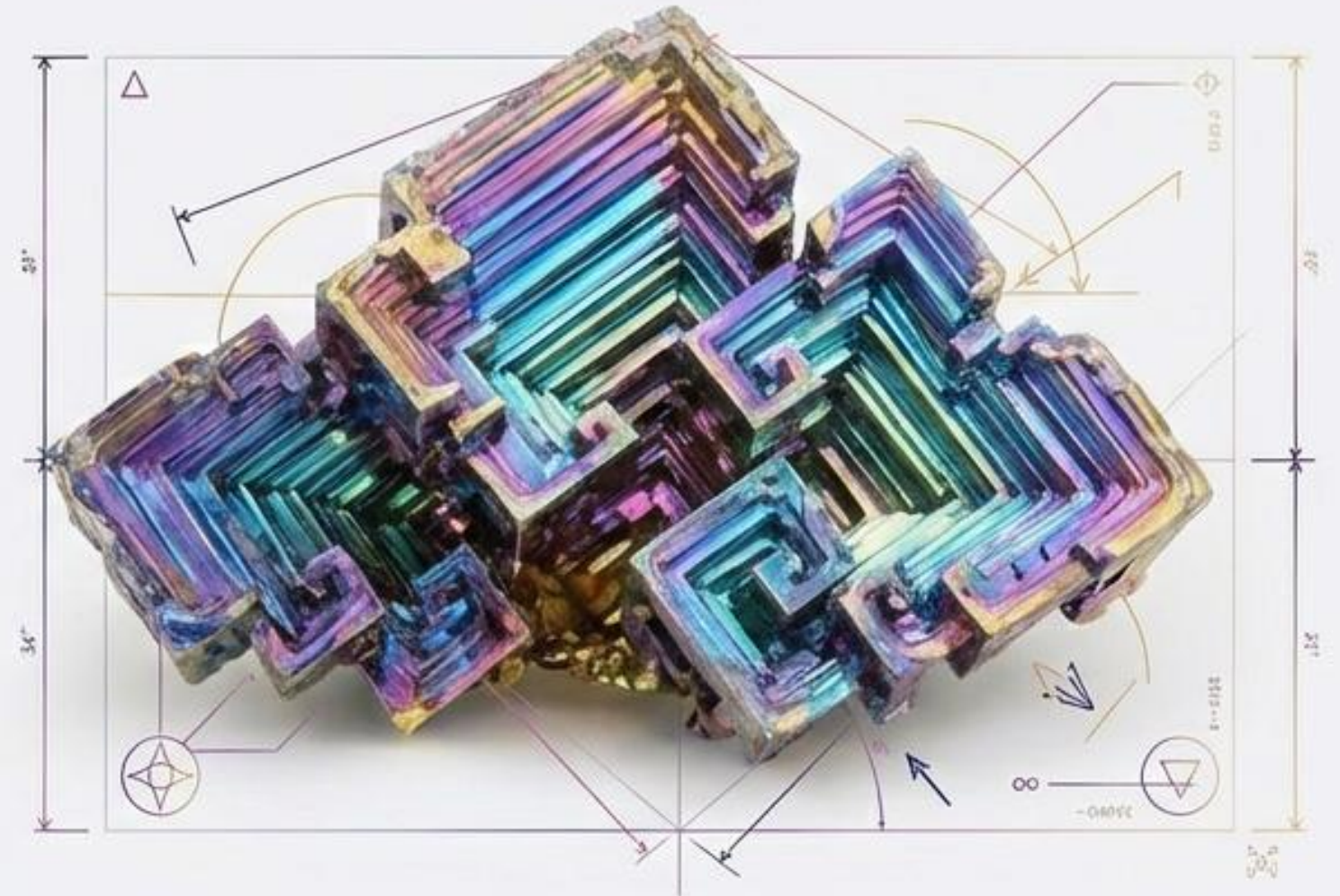
Bismuth presents a critical, often overlooked question in physics. We know *what* it looks like, but the standard model struggles to explain *why* it organizes this way. This is not just a pretty rock; it is a physical manifestation of a field state we are only just beginning to understand.

“Hopper Crystal” is a description, not an explanation.



Spinny Wind

Technically accurate, fundamentally empty.



Hopper Shape

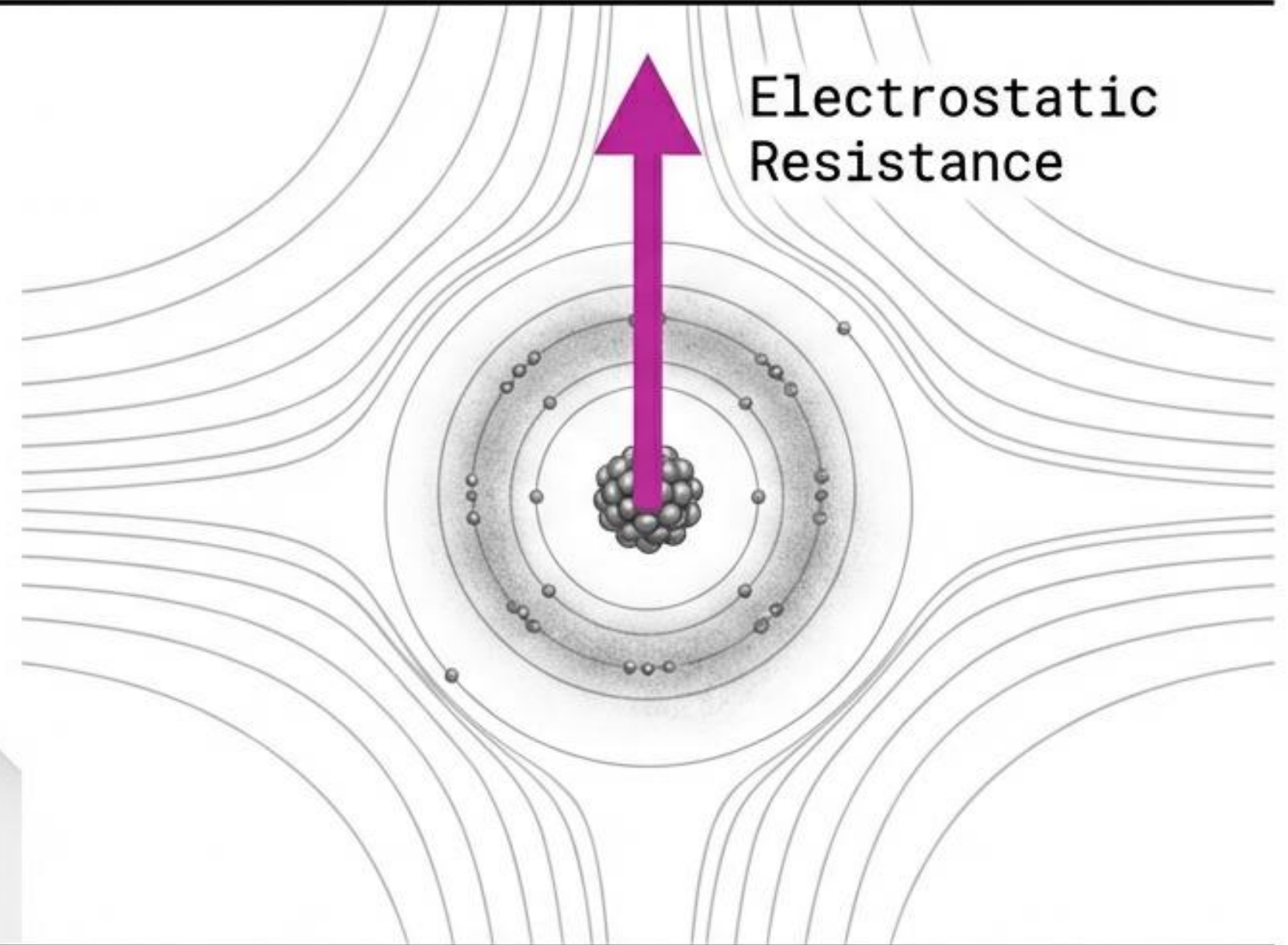
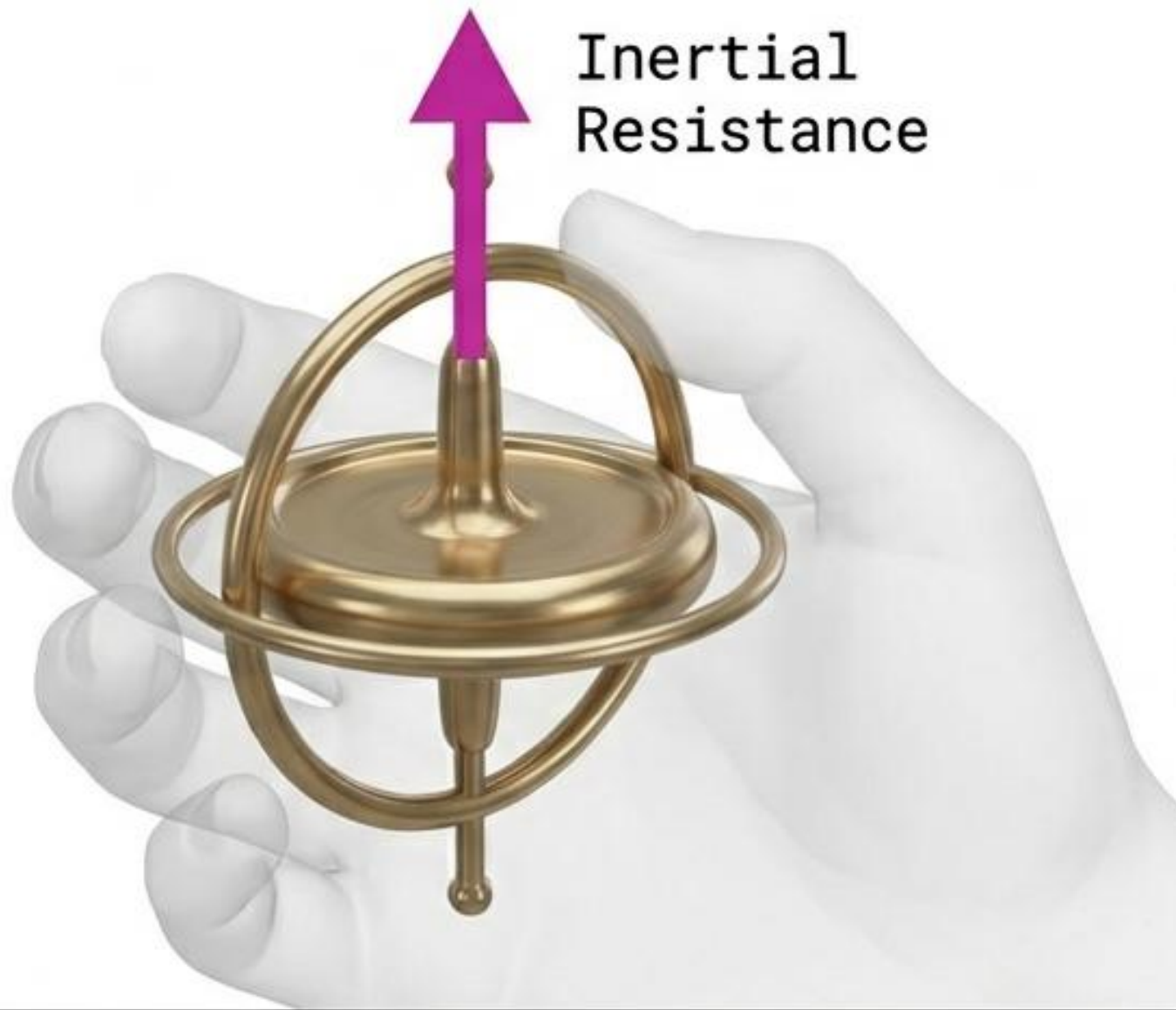
Science names the shape “hopper crystal,” effectively answering “what” while ignoring “why.”
To understand Bismuth, we must stop looking at the surface shape and start looking for the forces that sculpt it. We need to go deeper than the label.

Decoding the language of field physics.

Source Term	Our Definition Tonight
Dielectric Inertia	Electrostatic Inertia (The resistance to change in the electrostatic field).
Dielectricity	Electrostatic Field Energy.
Counterspace	Inward-Collapsing / Convergent Geometry.
Spatial (Magnetism)	Outward-Expanding / Divergent Geometry.
Dielectric Capacitor	Electrostatic Energy Store (“Field Battery”).

Key Insight: Bismuth’s internal electrostatic field state is so saturated that it resists any external attempt to disrupt it.

Diamagnetism is Not Repulsion. It is Refusal.



Core Concept: Electrostatic Inertia

Analogy: Just as a fast-spinning gyroscope creates inertial resistance to movement, Bismuth's saturated internal field creates electrostatic resistance to magnetic alignment.

Takeaway: Bismuth is not diamagnetic by nature; it is diamagnetic by consequence. It refuses to be moved.

Z=83 is an island of perfect stability in a sea of decay.



Magic Number:
126 neutrons (nuclear
physics stability peak).



The Lifespan:

Half-life of 2×10^{19} years
(older than the universe itself).



The Cliff:
Add just 1 proton →
Lethal Polonium.



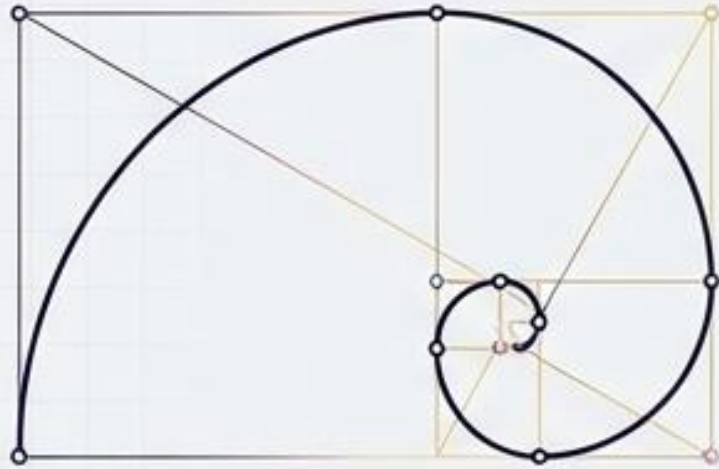
The Rarity:

9 ppb (comparable to
gold and platinum).



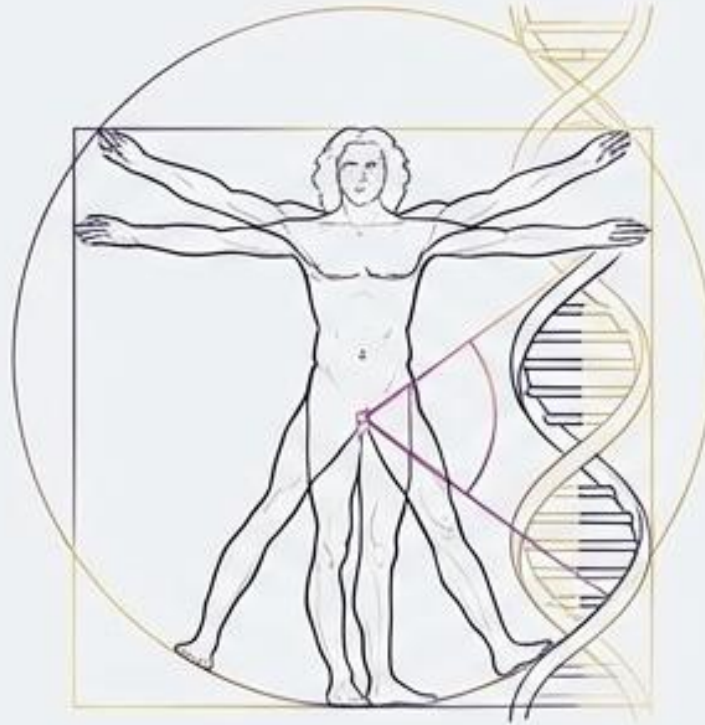
Bismuth isn't just another metal; it is a unique geometric lock in the atomic structure.

The universal constants of growth and life.



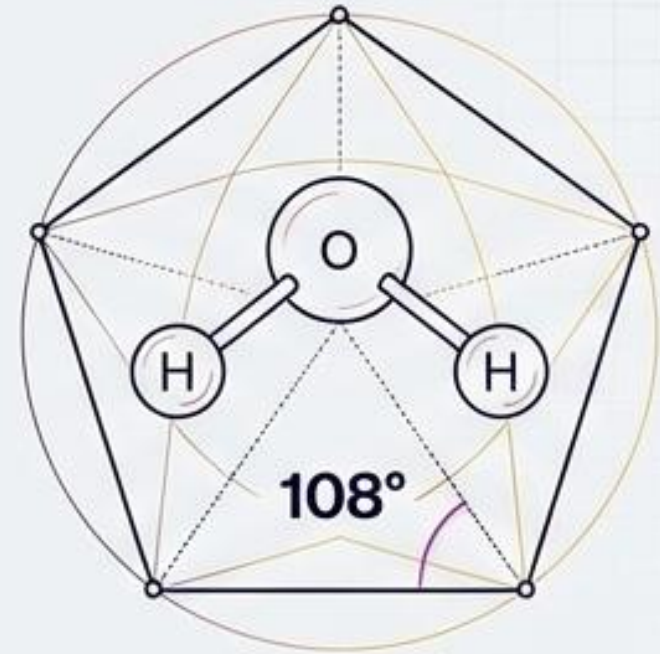
137.5°

The Golden Angle of Growth.



85°

The Golden Angle of Life.



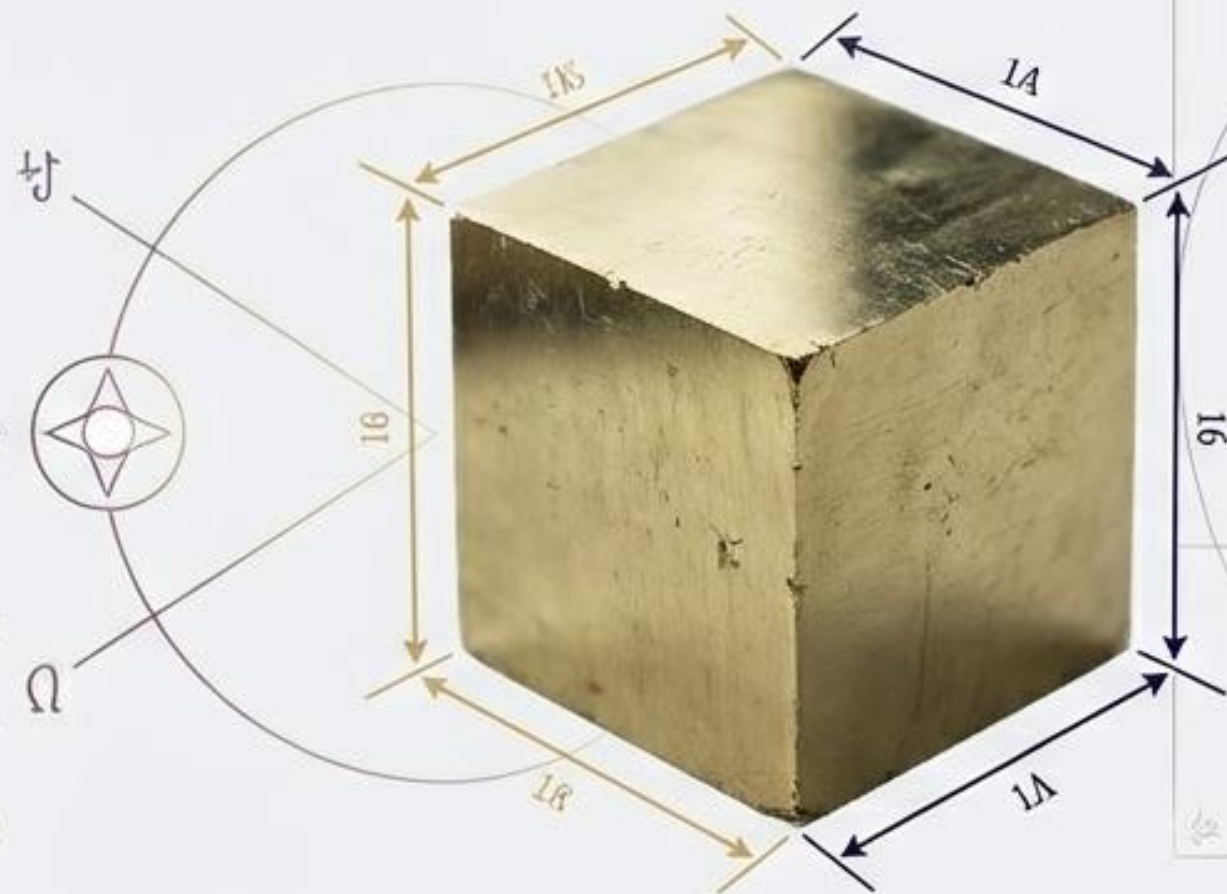
108°

The Golden Angle of Manifestation.

These angles appear throughout the natural world where energy organizes into matter.
The key question: Do they appear in Bismuth's crystal structure?

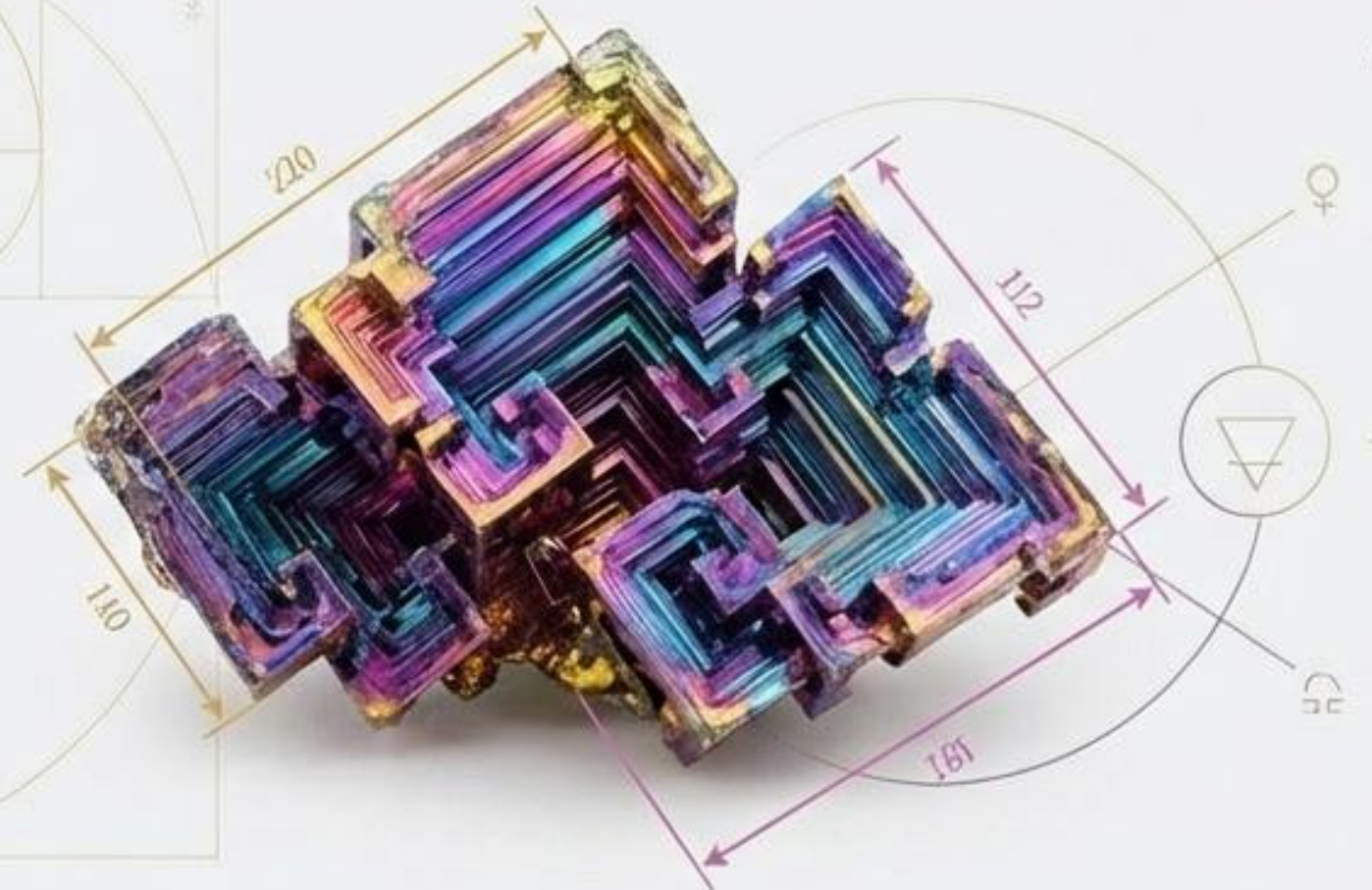
Two opposing geometries govern the physical world.

SPACE (Divergent)



Associated with: Magnetism, Expansion, Centrifugal force.
Example: Pyrite Cubes (outward growth).

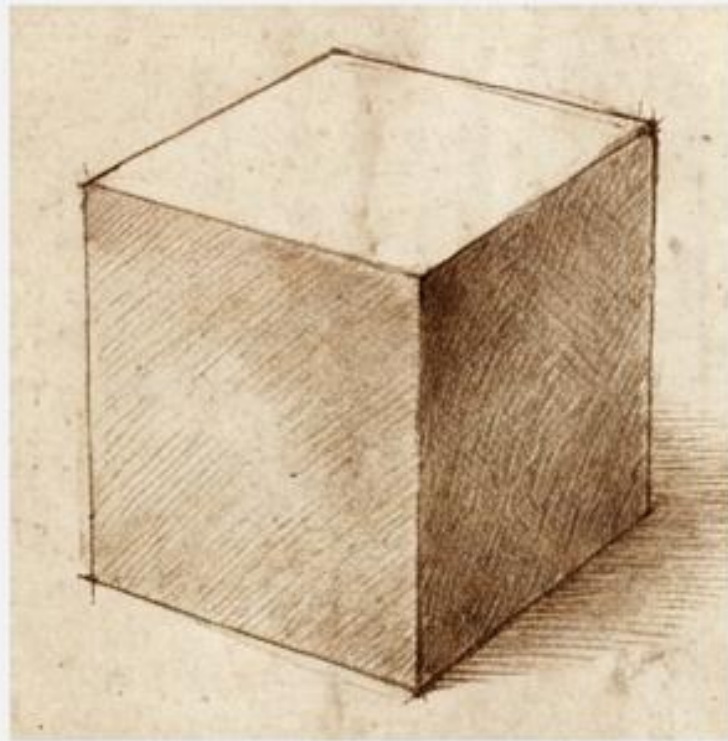
COUNTERSPACE (Convergent)



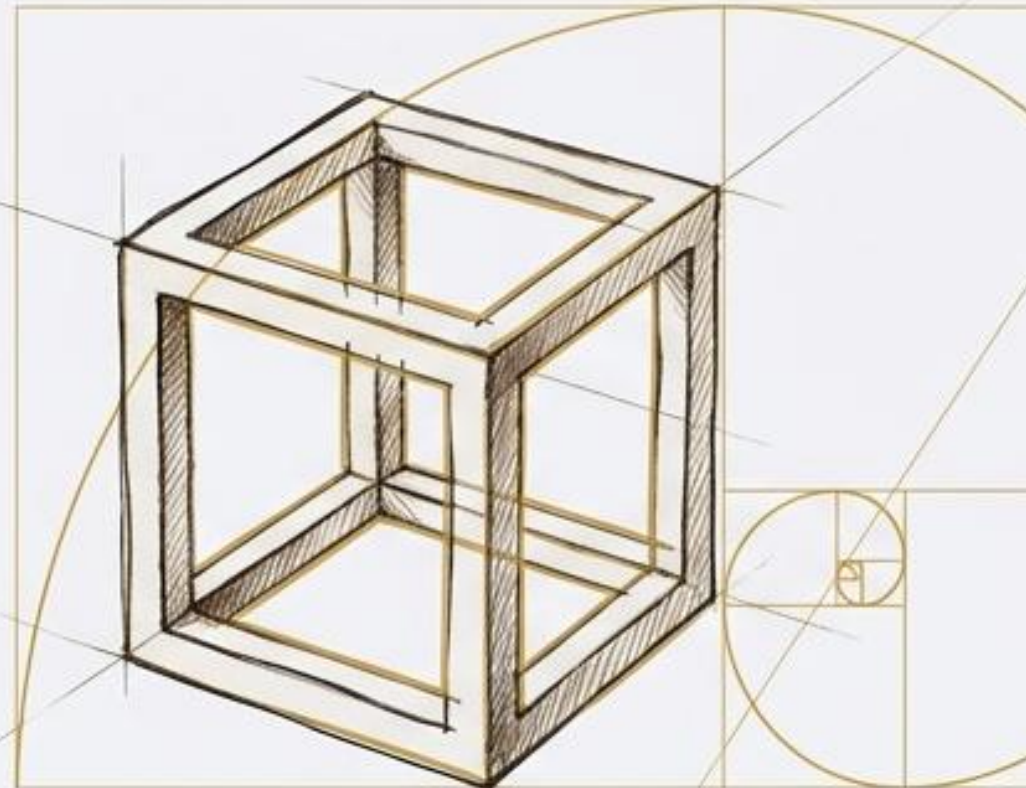
Associated with: Electrostatic fields, Compression, Centripetal force.
Example: Bismuth "Anti-Cubes" (inward growth).

Standard magnetism is spatial and expanding. Bismuth represents the inverse: a convergent, inward-collapsing geometry driven by high electrostatic charge.

Leonardo da Vinci's "Vacuus" manifests in reality.



Solidus

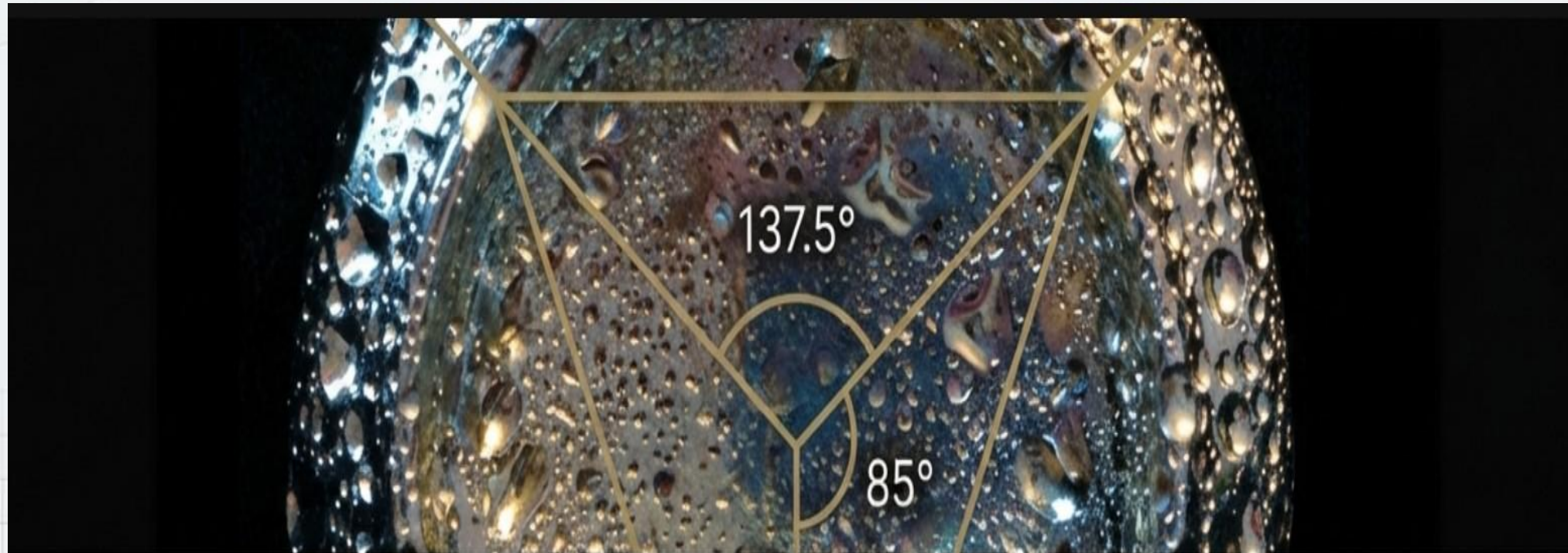


Vacuus



Leonardo described the "Solidus" and its inverse, the "Vacuus." Bismuth naturally grows as a **Vacuus**. This is not poetic coincidence; it is a geometric necessity. The crystal shape is the physical consequence of inward-collapsing field geometry.

Experimental data confirms the geometric signature.



- The experimental results perfectly validated the theoretical predictions.
- The castings revealed large divots and inertial patterns forming at the precise golden angles of **137.5°** and **85°**.
- This confirmed that the same universal code governs both centrifugal growth in nature and centripetal "anti-growth" in a dielectrically dominant element.

The Anti-Cast Experiment

Method: Molten bismuth poured into pre-heated molds with controlled cooling.

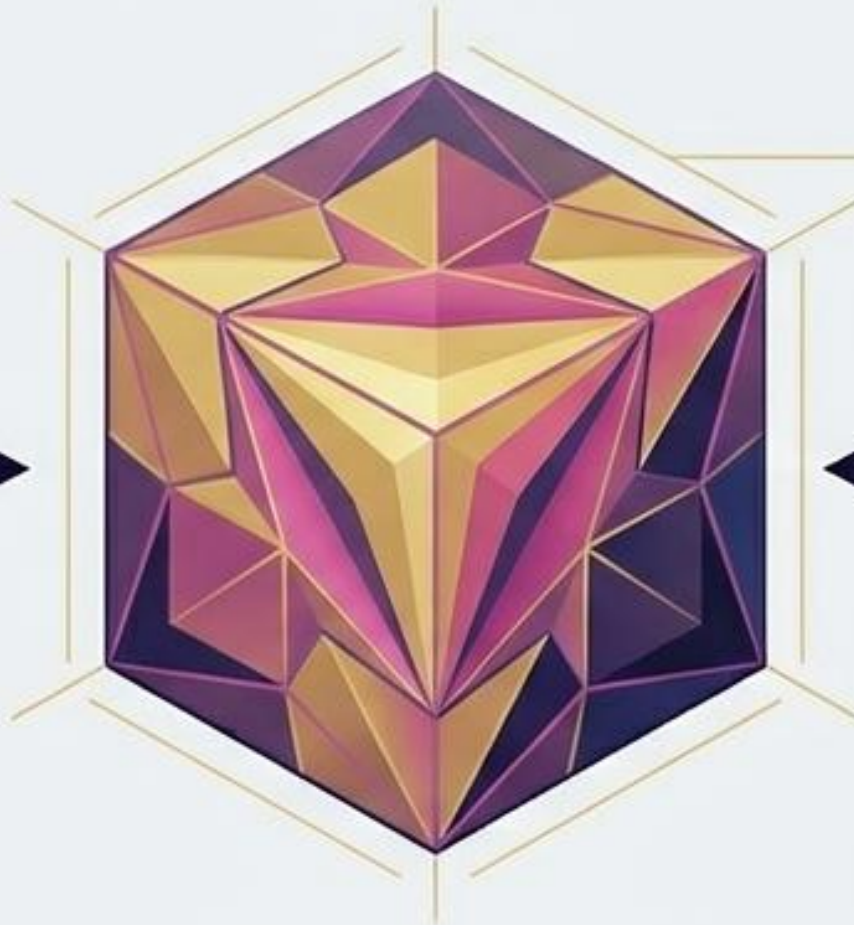
Result: Divots naturally formed at precise golden angles.

Conclusion: The field geometry leaves its undeniable signature in the solid metal.

The solid crystal is a frozen record of the liquid field.



Liquid Density: 10.05 g/cm^3



Solid Density: 9.78 g/cm^3

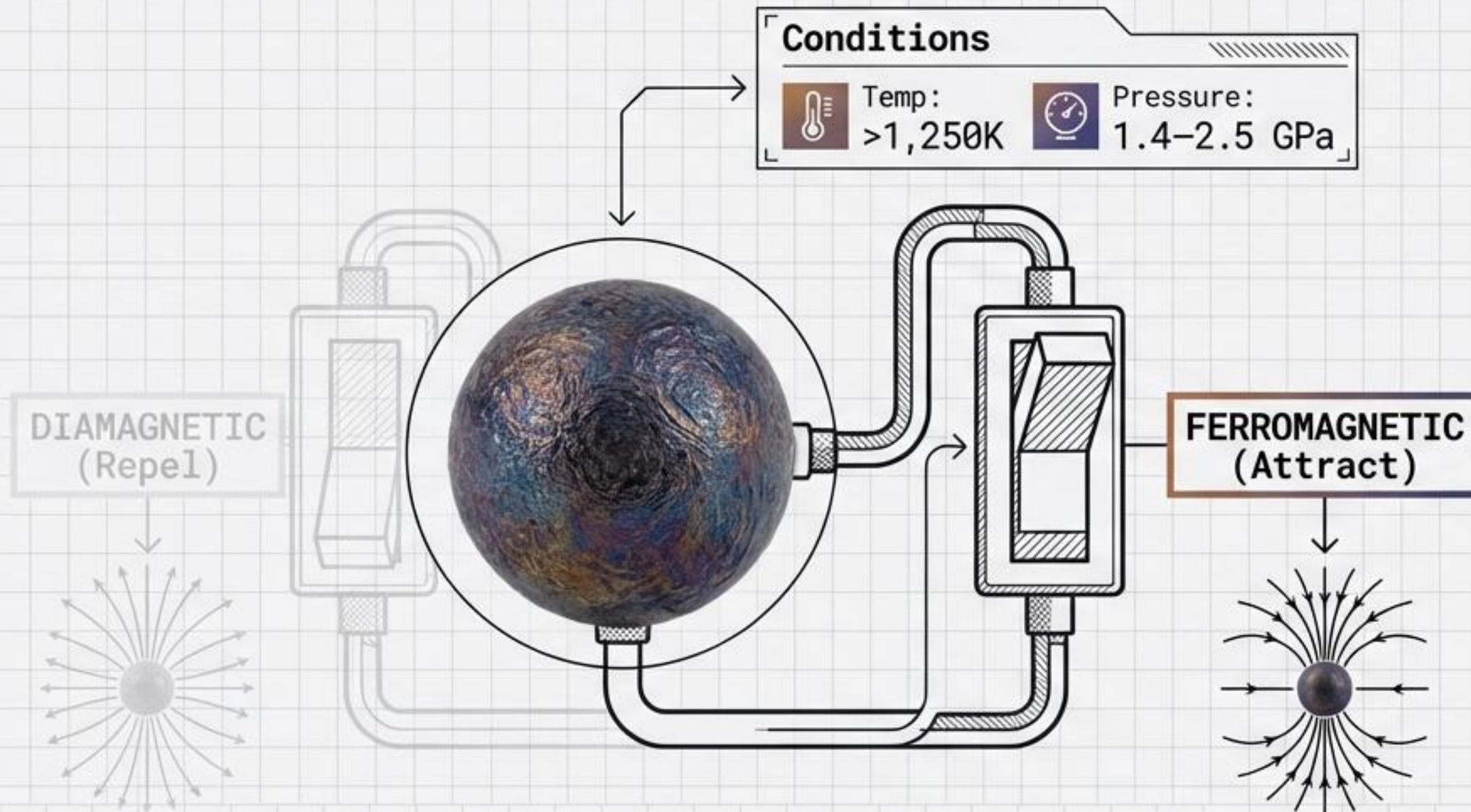
Expands 3.32% on freezing

← **(Rare property shared with water)**

Bismuth cools from the center outward. Unlike most elements that contract and scramble their structure, Bismuth expands. This expansion allows it to 'remember' and lock in the internal field pattern of the liquid state.

The Most Diamagnetic Element Can Be Switched

EXHIBIT A:
Shu, Yu et al.
PNAS 114(13), 2017.



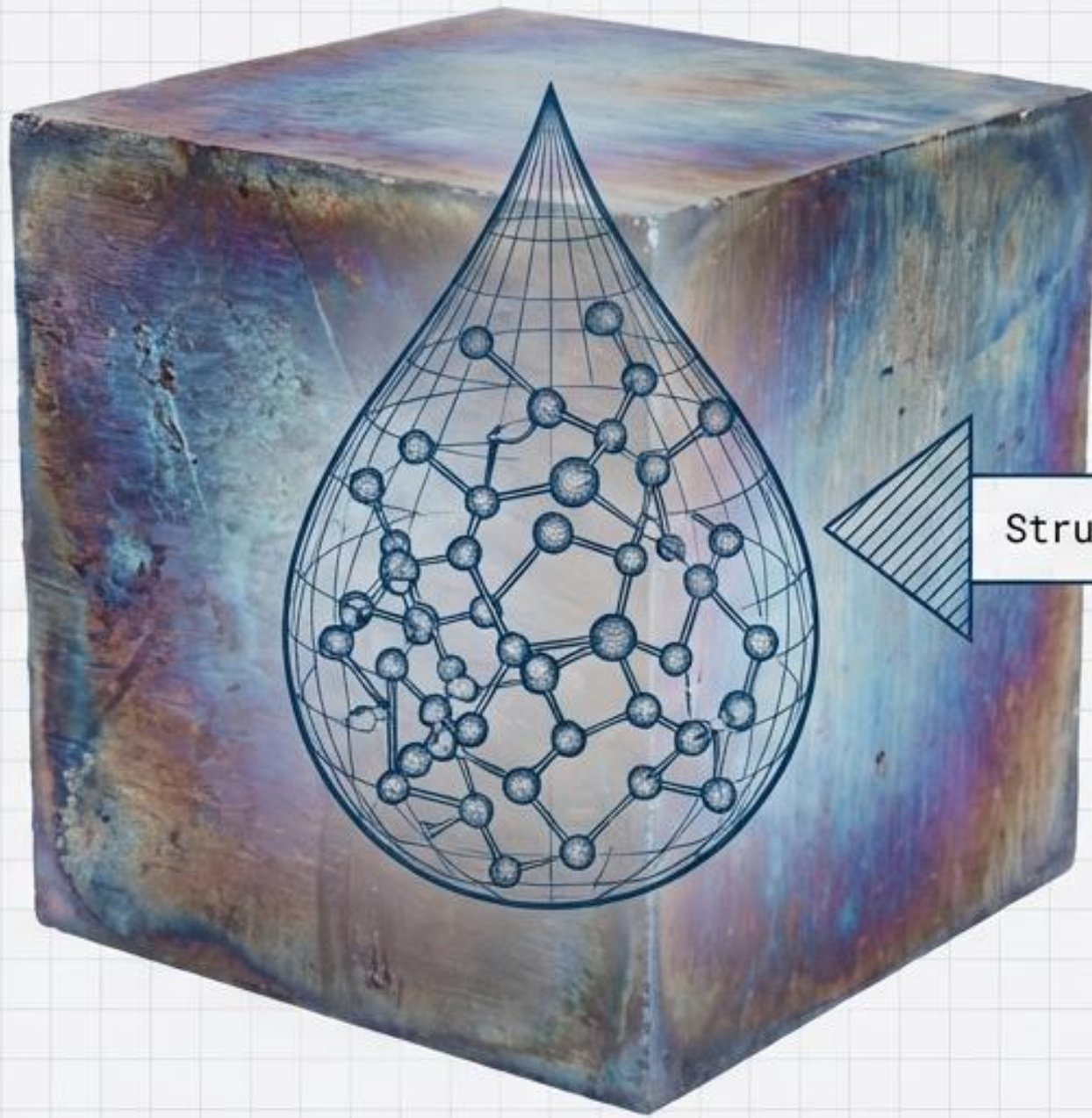
THE DISCOVERY:
When quenched from
>1,250K at 1.4–2.5 GPa,
Bismuth becomes
ferromagnetic.

KEY DETAIL:
HRTEM imaging reveals
“fuzzy boundary layers”
of 2–3 nm.

IMPLICATION:
We can fundamentally
invert the element’s field
state by controlling the
solidification window.

CLASSIFICATION:
SCIENTIFIC/TECHNICAL USE ONLY

The Solid Remembers the Liquid



Structural Memory Retained

THE MECHANISM:

A liquid-liquid phase transition occurs at $\sim 1,250\text{K}$.

THE RESULT:

Rapidly cooled solids retain a structural memory of the high-temperature liquid state.

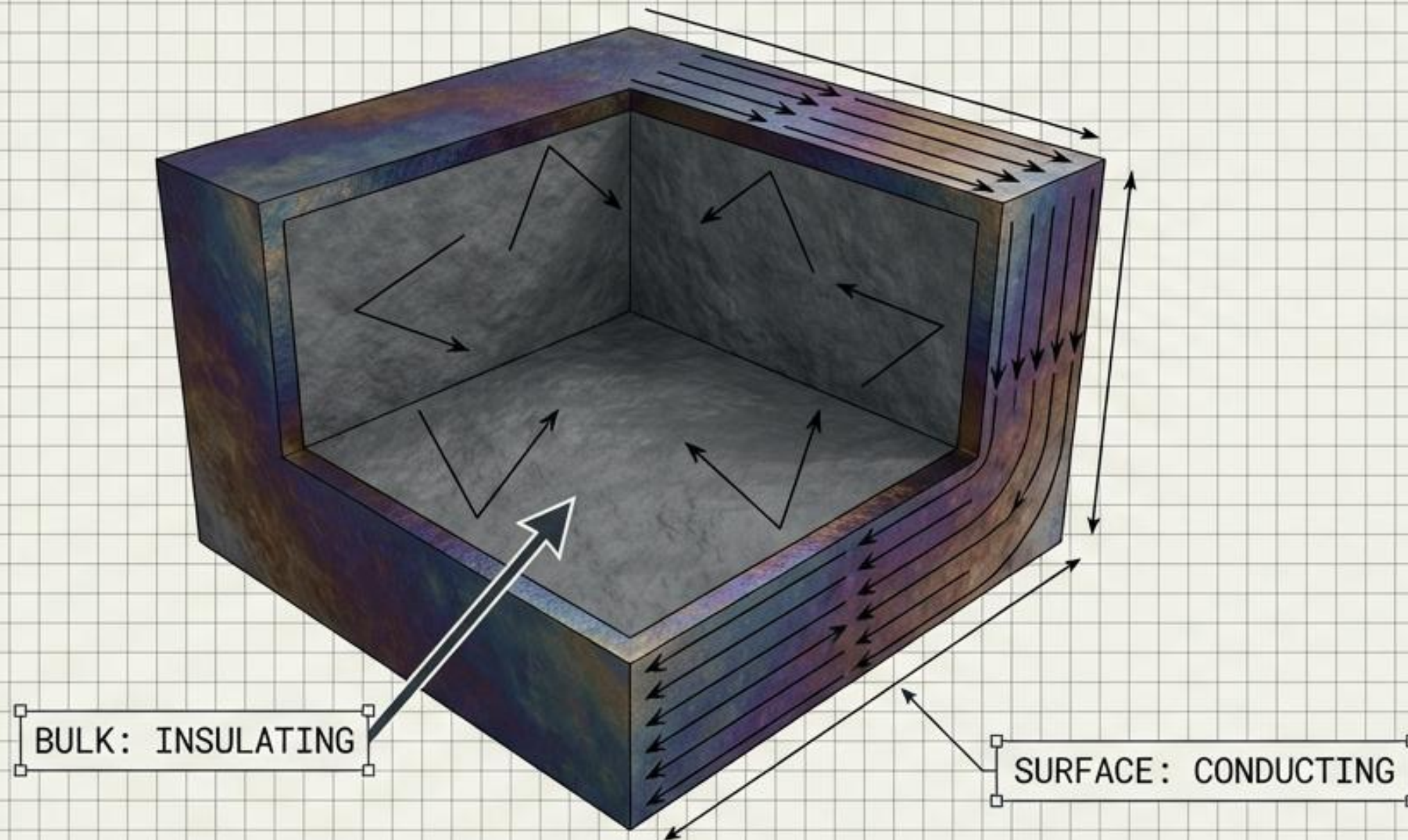
SIGNIFICANCE:

This is the first structural memory observed in any pure element.

QUOTE:

The paper describes this as a "pathway in tailoring physical properties."

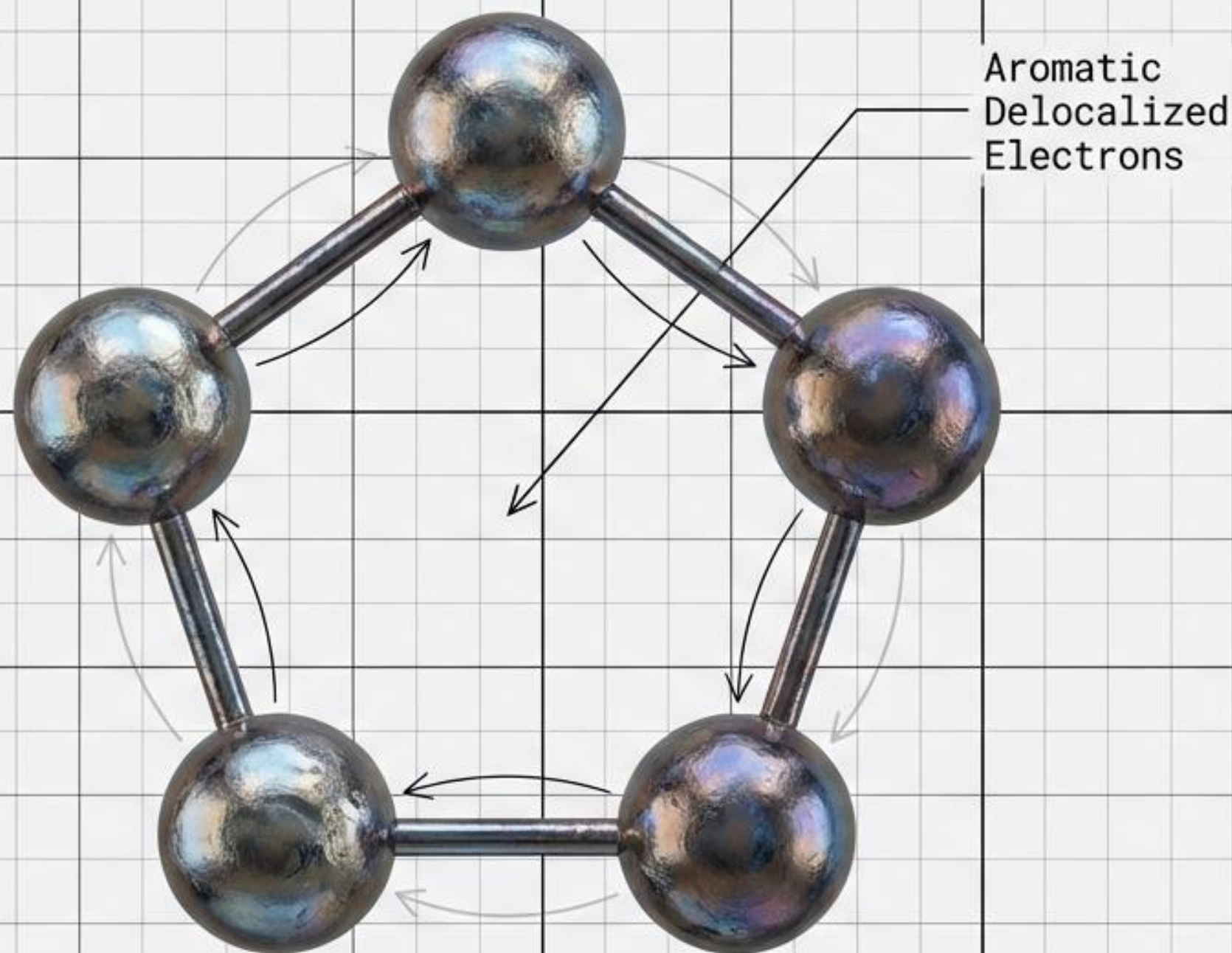
Quantum Behavior That Resists Thermal Disruption



BODY KEY

- **Princeton (2022, Nature Materials):** Confirmed room-temperature quantum effects in Bismuth topological insulators. It conducts on the surface while insulating in the bulk.
- **McGill (2025, Physical Review Letters):** Observed temperature-independent anomalous Hall effect in 68nm flakes.
- **THE TAKEAWAY:** Quantum behavior persists against thermal noise, confirming an intrinsic "inertial field property."

Bismuth Chemistry Is Just Beginning



THE BREAKTHROUGH:

KIT (Feb 2025) synthesized the Bi₅⁻ ring, the heaviest cyclopentadienyl analog ever created.

PROPERTIES: Displays aromatic properties with delocalized electrons.

APPLICATIONS: The BiCMat project is now exploring this for batteries, catalysis, and gas storage.

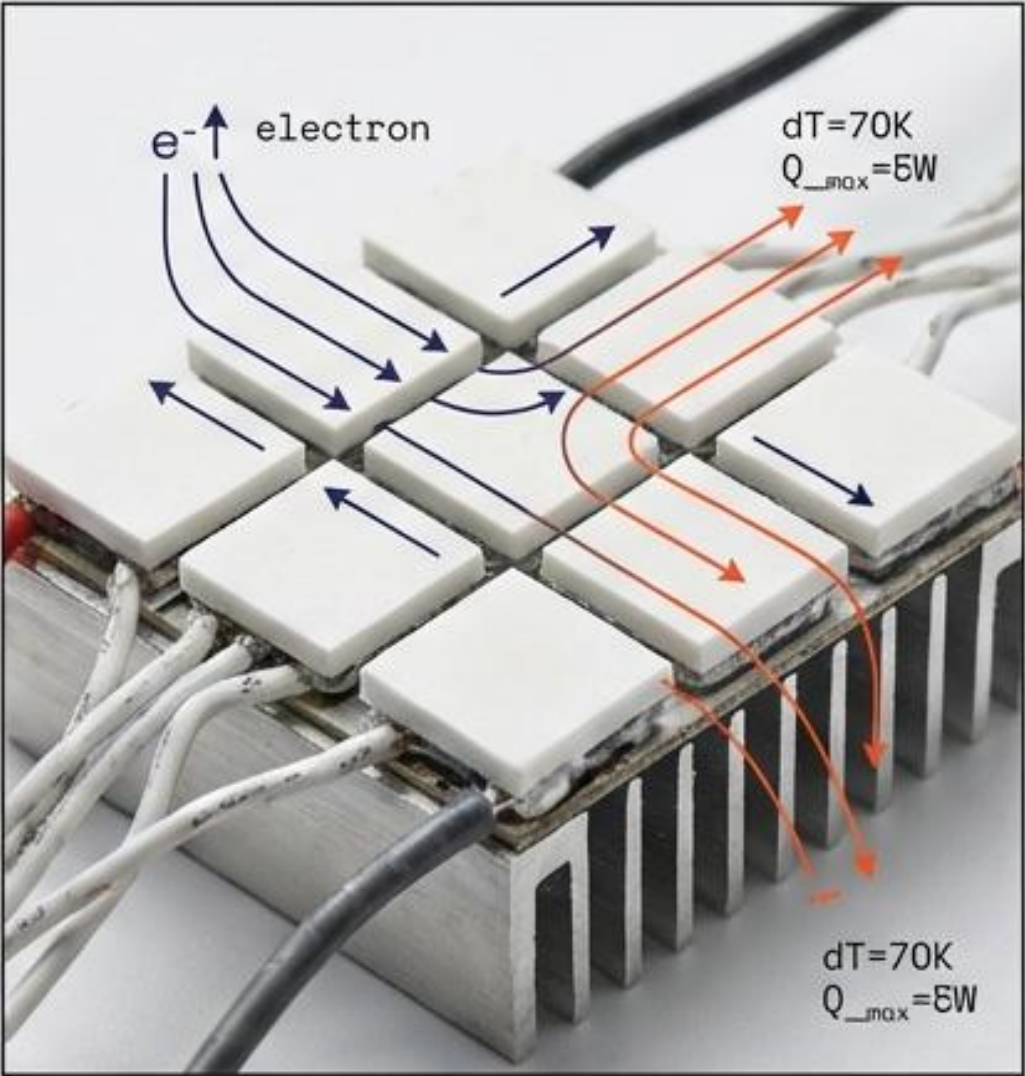
SOURCE: Published in Nature Chemistry.

The Paradox of Utility

Industry relies on properties it does not fully understand.



SHIELDING (LBE REACTIVITY)



ENERGY (THERMOELECTRICS)

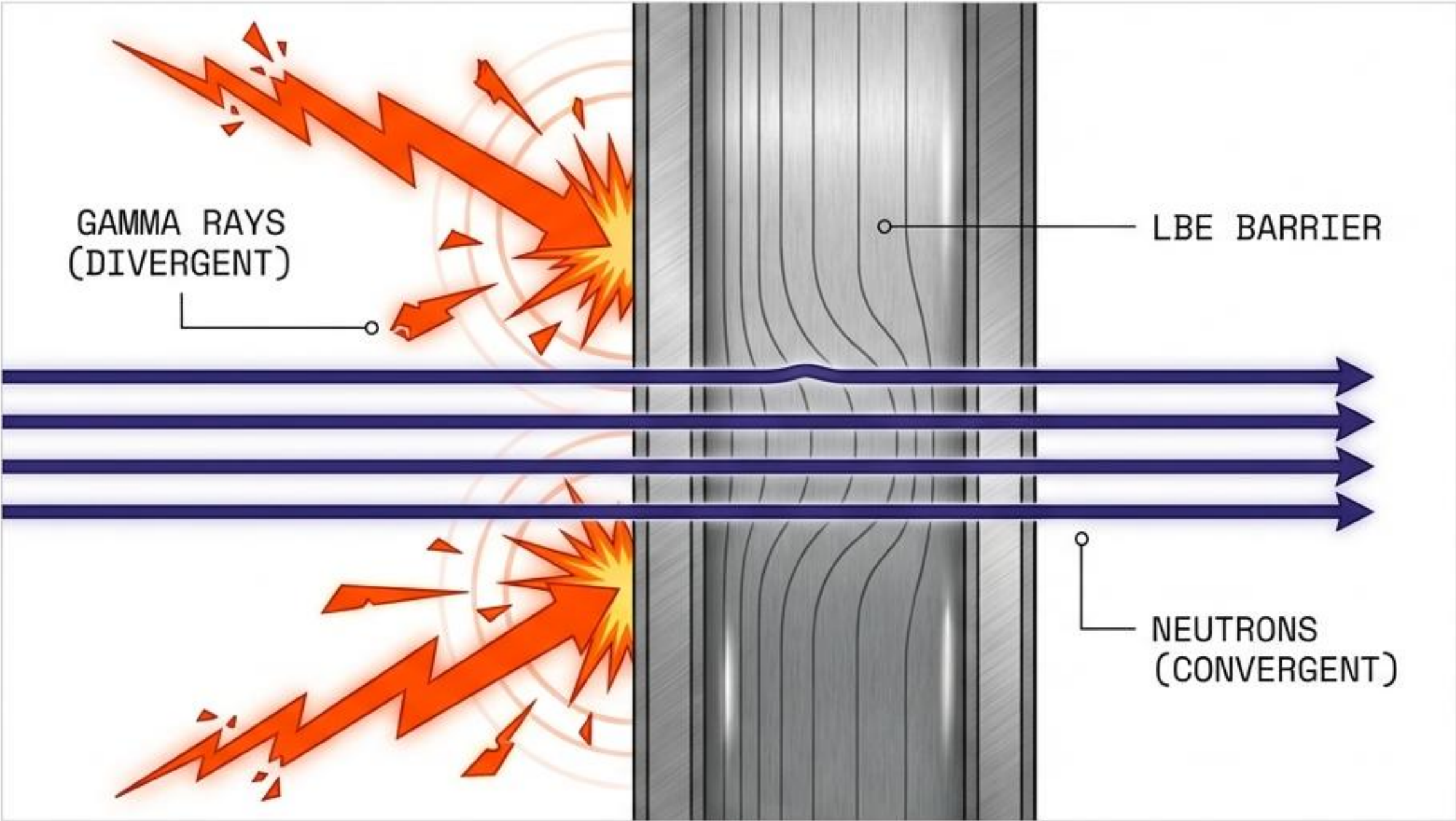


BIOLOGY (TOXICITY FILTER)

ROOT CAUSE: ELECTROSTATIC INERTIA

The Nuclear Shield: Lead-Bismuth Eutectic

The material acts as a filter, blocking divergent energy while permitting convergent fields.



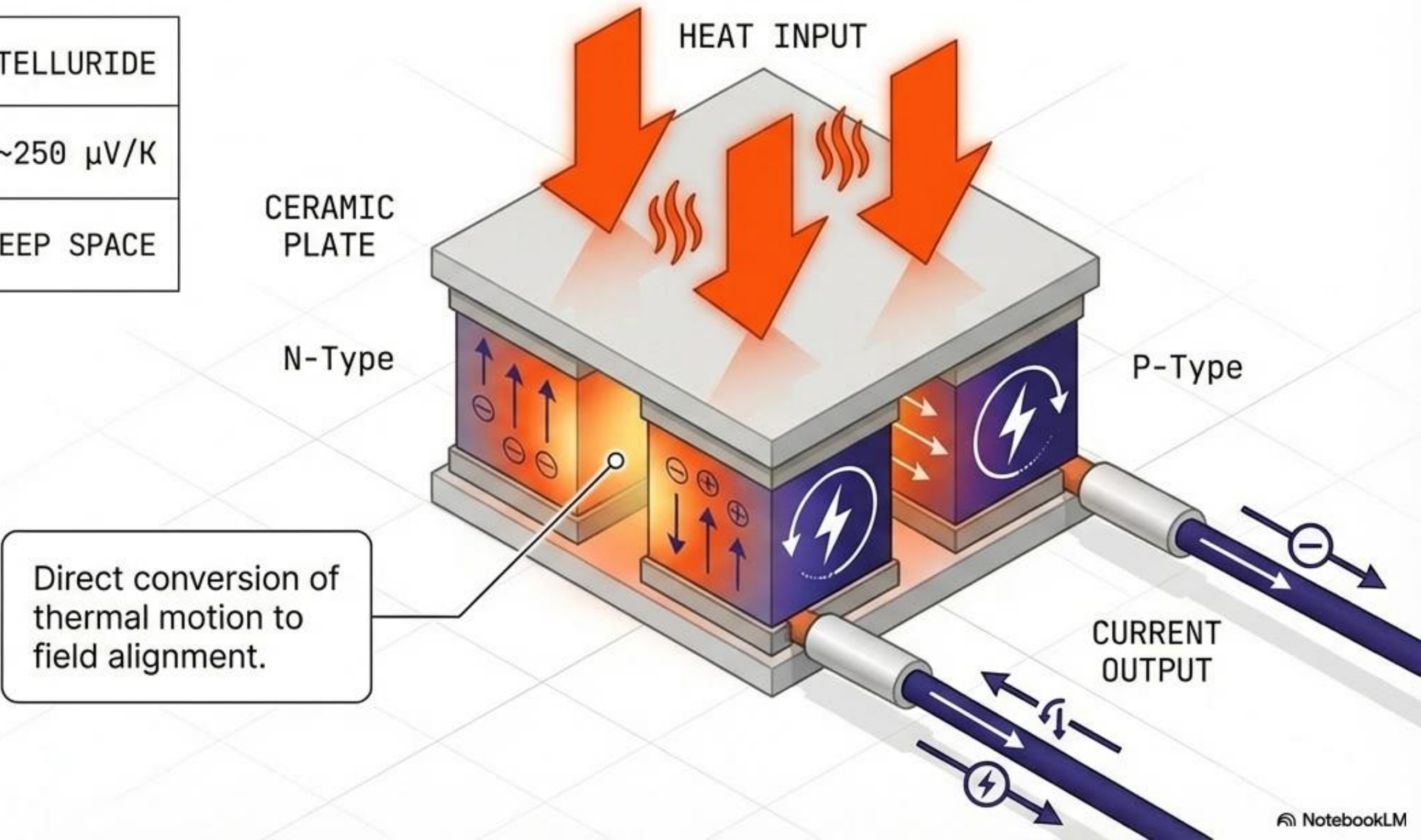
TECHNICAL SPECIFICATIONS	
MELTING POINT:	123.5°C
BOILING POINT:	1,670°C
STATUS:	PASSIVE SAFETY
HISTORY:	SOVIET ALFA-CLASS SUBMARINES

Insight: The material acts as a filter, blocking divergent energy while permitting convergent fields.

Thermoelectric Mastery (Bi2Te3)

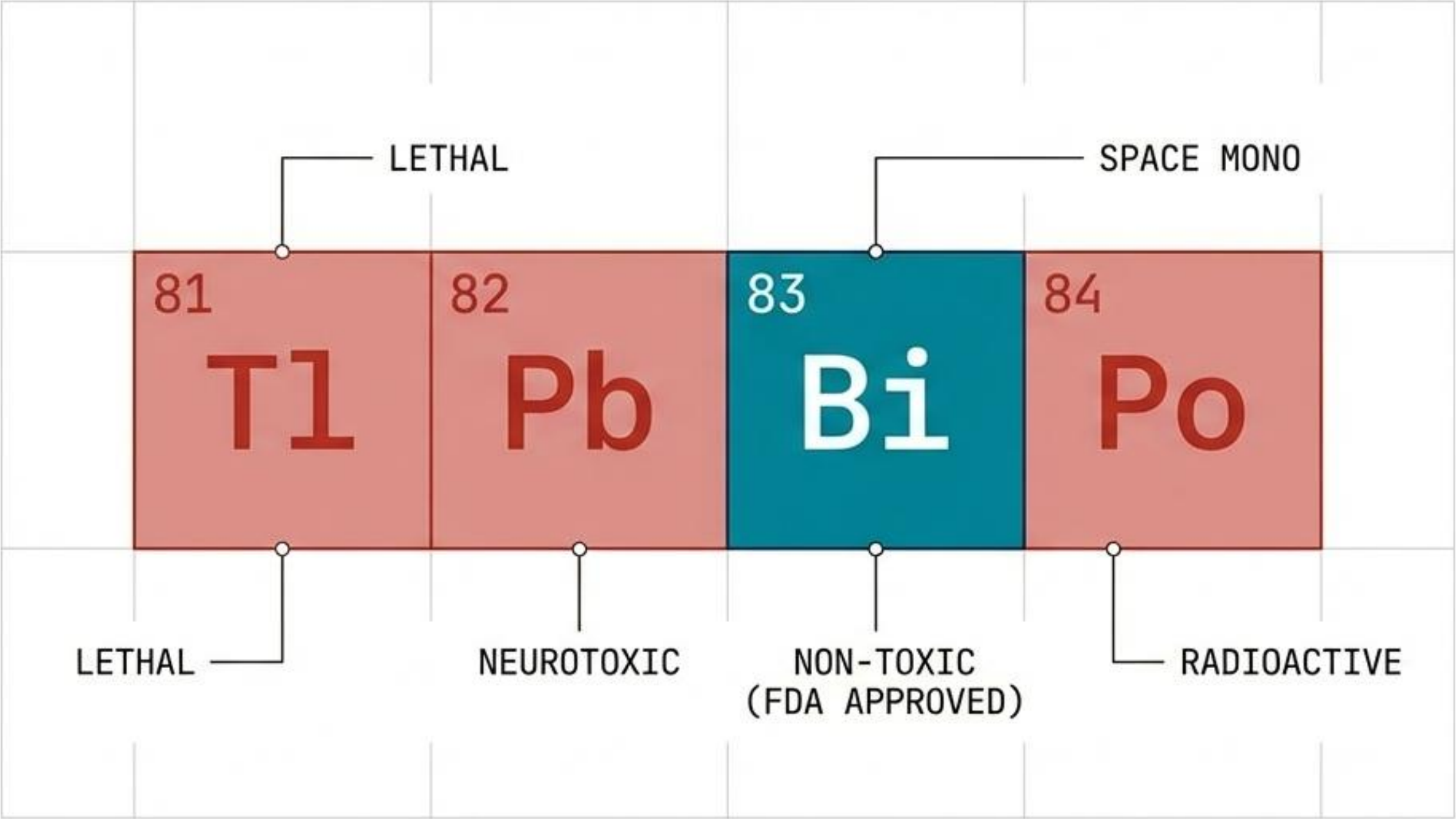
Inter to sub schematic Neue Haas Grotesk Display Pro.

MATERIAL:	BISMUTH TELLURIDE
SEEBECK COEFF:	~250 $\mu\text{V/K}$
USAGE:	SATELLITES / DEEP SPACE



The Medical Anomaly

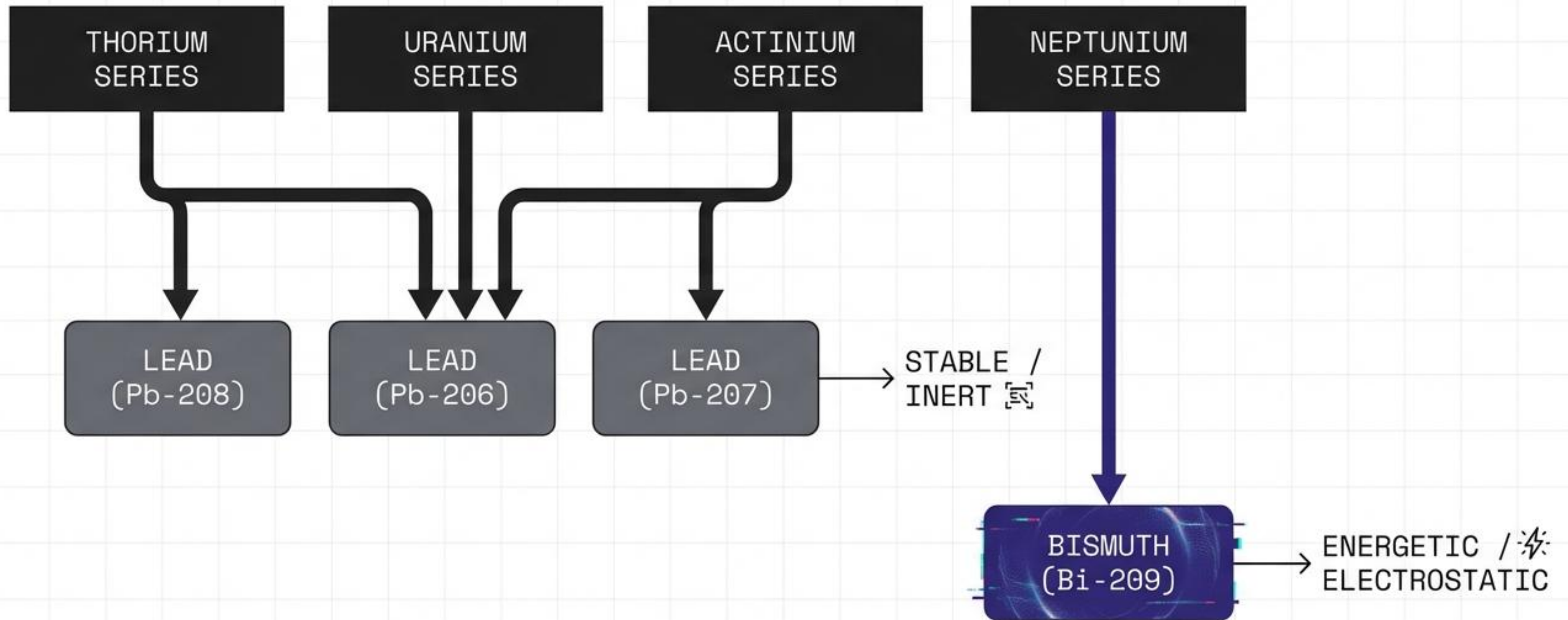
Surrounded by the most dangerous elements on earth, Bismuth remains an island of stability safe enough to drink (Pepto-Bismol).



Surrounded by the most dangerous elements on earth, Bismuth remains an island of stability safe enough to drink (Pepto-Bismol).

Root Cause: Electrostatic saturation prevents harmful biological binding.

THE FINAL DESTINATION



Bismuth is the universe's alternate endpoint for transmutation.

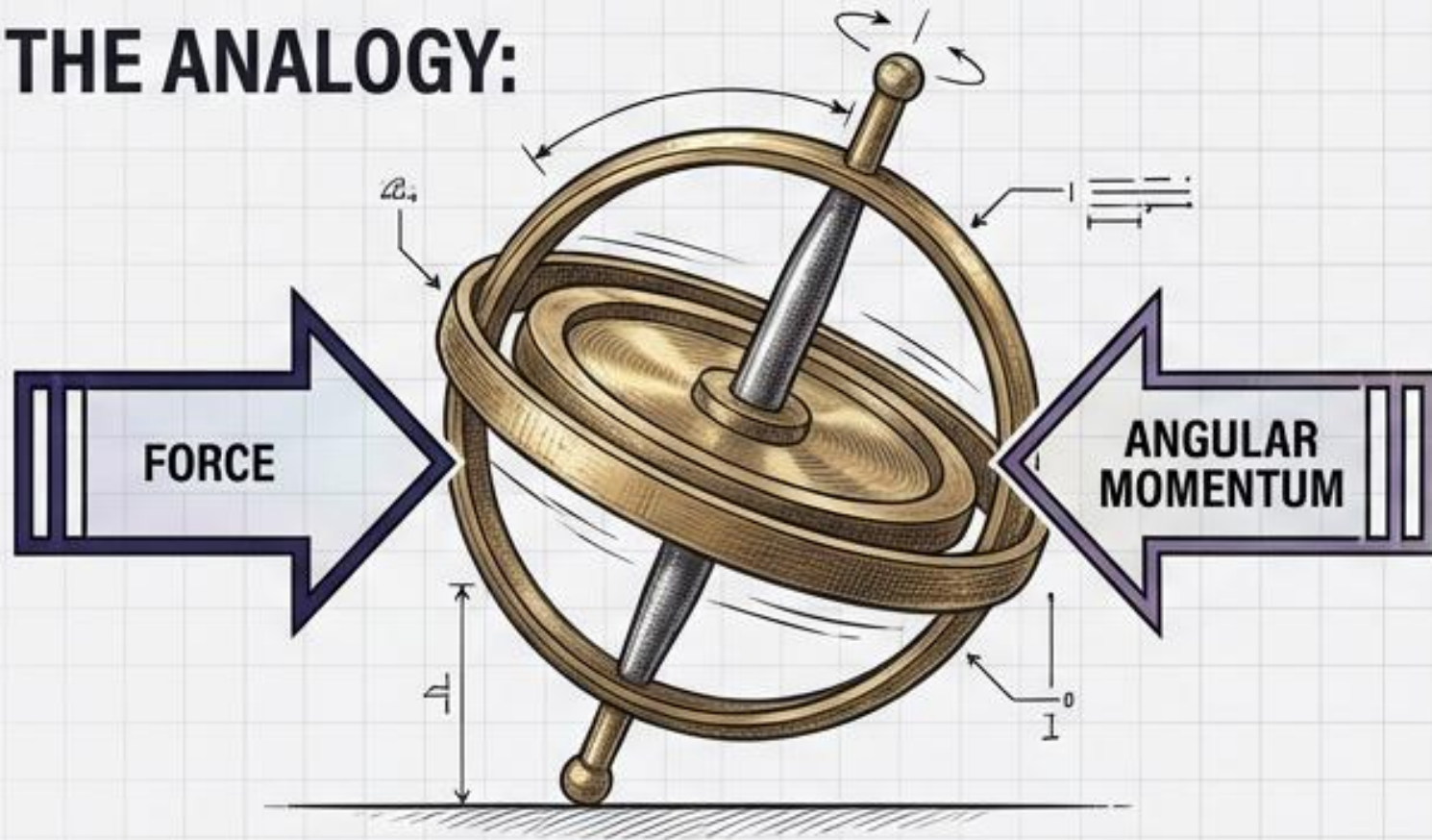
THE OVERCHARGED NUCLEUS

GLITCH IN THE MATRIX: $\text{MASS} < \text{ENERGY}$



It Doesn't Repel. It Refuses.

THE ANALOGY:



THE REALITY:



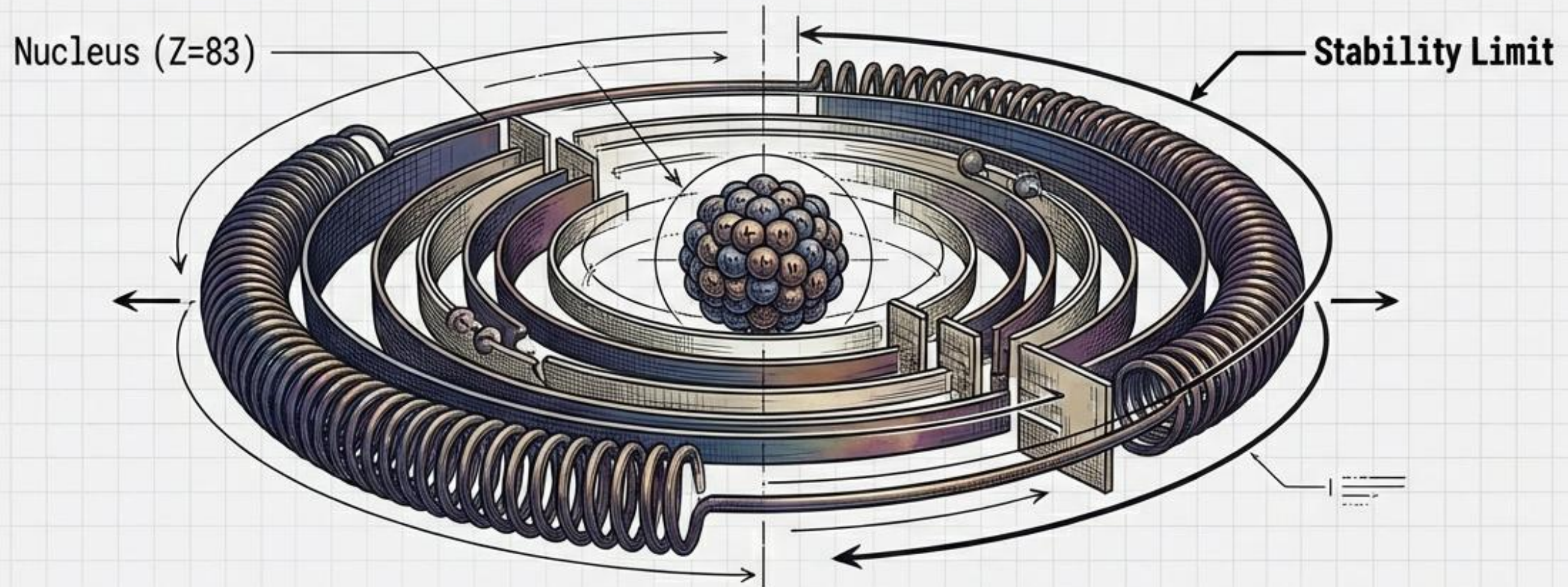
THE ANALOGY: A fast-spinning gyroscope resists reorientation due to angular momentum.

THE REALITY: Bismuth resists magnetic alignment due to electrostatic inertia.

THE SHIFT: Diamagnetism is not repulsion; it is inertial refusal.

THE KEY: As PNAS proved, if you push hard enough (pressure/temp), you can overcome the inertia and flip the gyroscope.

Bismuth is a Saturated Field Battery



THE LIMIT: At Atomic Number 83, Bismuth sits at the absolute stability limit of the periodic table.

THE CHARGE: The nucleus is "overcharged"—containing more energy than the sum of its parts.

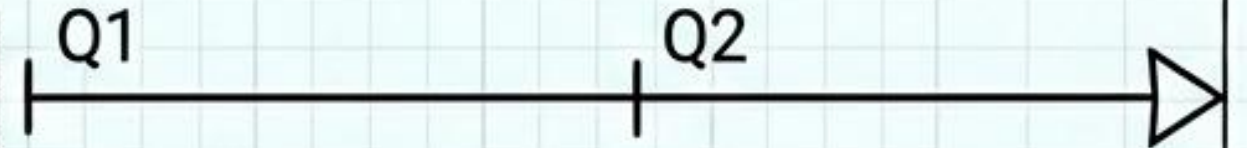
THE POTENTIAL: It is a store of electrostatic potential waiting to be tapped.

THE LOGIC: Since PNAS showed the battery can be switched, we must ask: can it be discharged?

The Methodology Roadmap

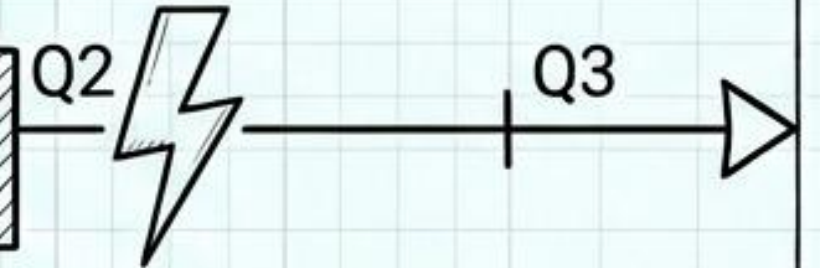
Phase 1: Field Manipulation

Method: Halbach arrays + Golden Ratio geometry.
Validation: Casting experiments.



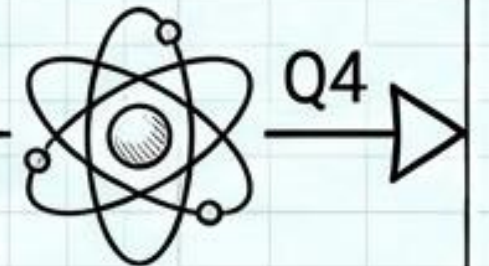
Phase 2: Electrostatic Saturation

Method: High-voltage charging to lattice limit.
Validation: PNAS field-switching.



Phase 3: Proton Bombardment

Method: Stressing nucleus to edge of instability.
Validation: Nuclear physics theory.

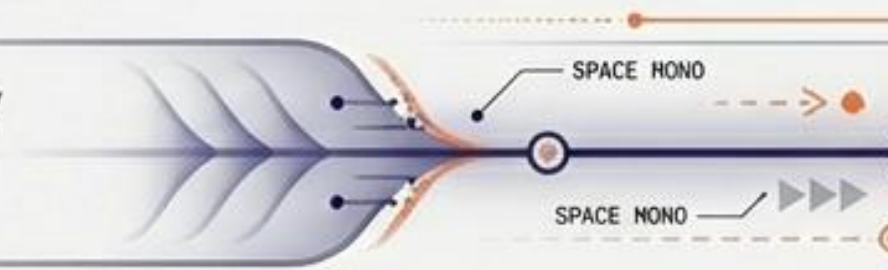


THE HORIZON



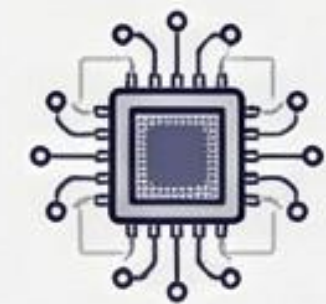
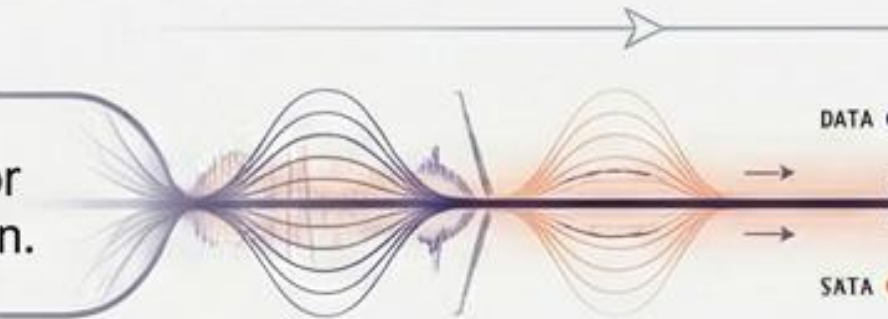
PROPULSION

Convergent geometry for inertial mass reduction.



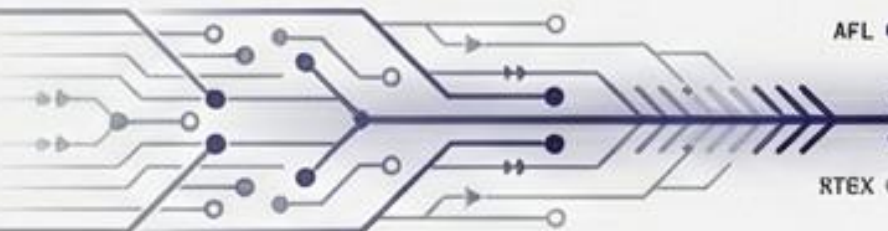
ENERGY

Electrostatic inertia for clean power extraction.



COMPUTING

Topological Qubits & Spintronics.



MATERIALS

Field-programmed metamaterials.



SPACE MONO
**ENGINEERED
ZPE**

PROJECT ZPE - PHASE IV
CONVERGENCE POINT ALPHA

THE PUREST EXPRESSION

“Bismuth is the most electrostatically saturated stable element in the periodic table.”

Precision Engineering meets
Theoretical Physics
058.80/S 60, 7 depla

Crystallography

Secal coil

Chremethiered to
onten-ncariotne and
International Orange

Crysterlography
related to the
Fielet Physics

Every anomaly flows from this single principle.

Coming Next: The Grand Unification of Gravity, Magnetism, and Electricity.

VALIDATED SCIENCE

Shu, Yu et al. — **PNAS 2017**
(Memory Effect)

KIT (2025) —
Bi5- Ring Structures

Princeton University (2022) —
Room-temp Topological Insulator

Puthoff / Davis — **Metamaterial
Analysis (TTSA)**

McGill University (2025) —
Anomalous Hall Effect

Wheeler — Uncovering the Missing
Secrets of Magnetism

JOIN THE MISSION

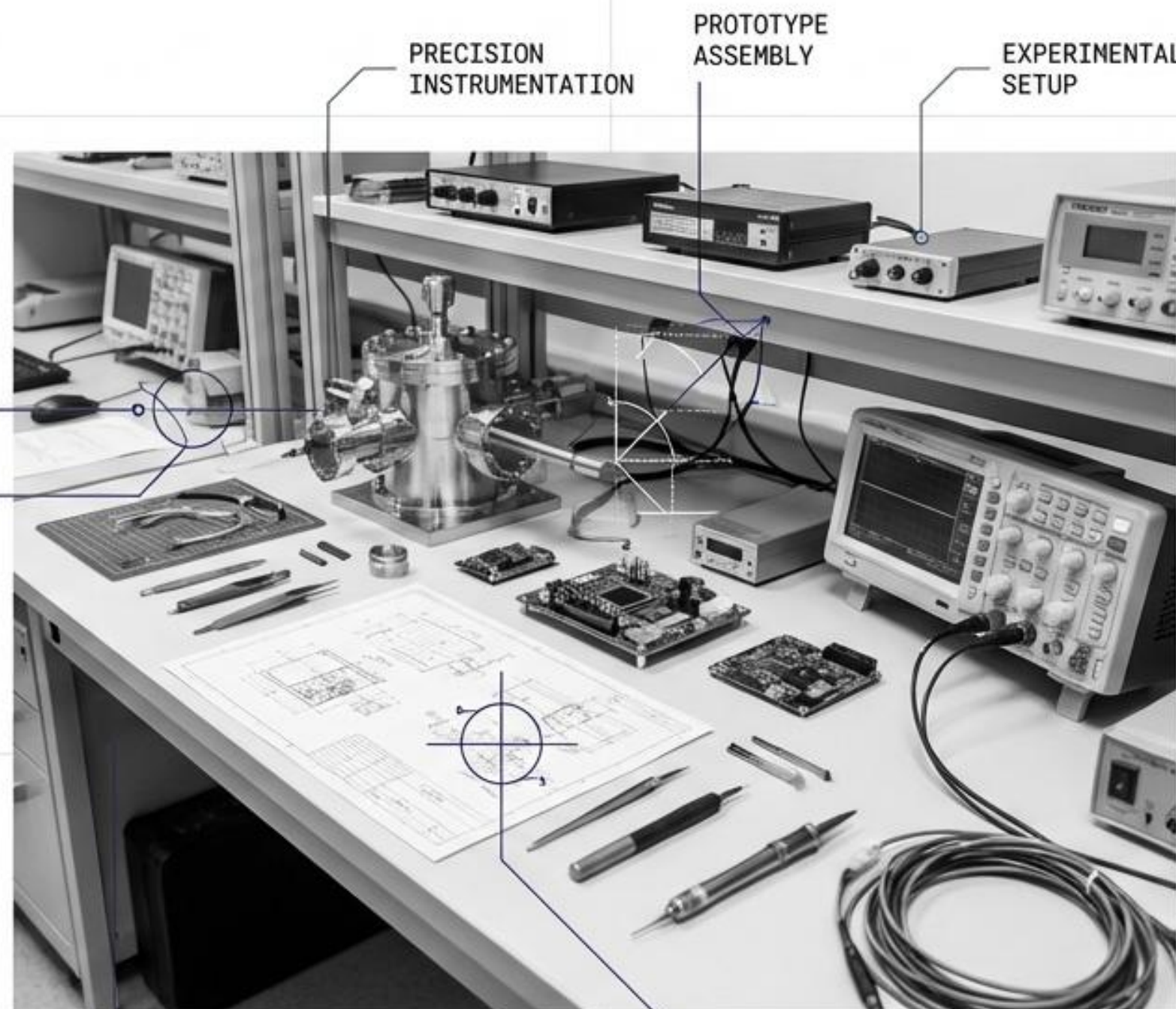
The theory is ready. The mainstream is catching up.
Now we need to build.

SEEKING: Experimentalists, Engineers, and Physicists.

GOAL: Design hardware for Zero-Point Energy and Propulsion.
Space Mono.

CONTACT: Marat Mukhamedyarov | marat@goodnewsventures.com
Inter

INITIATE PROTOCOL →



EXPERIMENTAL
SETUP

VACUUM
CHAMBER

MEDICAL GREY / DEEP INDIGO